MULTI LAB

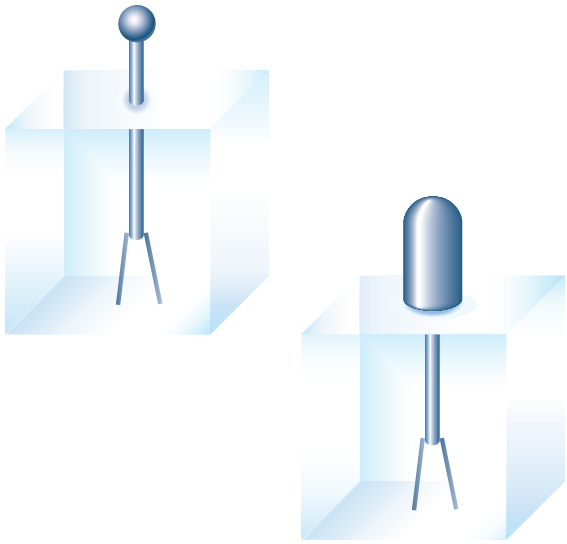
Electric Fields

TARGET SKILLS

- **Predicting**
- **Performing and recording**
- **Analyzing and interpreting**

Cover It Up

Rub an ebonite rod with fur. Bring the rod close to the cap of a metal leaf electroscope, then remove the rod. Sit a small inverted metal can over the cap of the electroscope and repeat the experiment.



Analyze and Conclude

1. What is the reason for the difference in the results of the two experiments?
2. Suggest an explanation of the role of the metal can.

Swinging Pith Ball

Support two aluminum squares (about 10 cm square) in grooved wooden blocks and place them 3.0 cm apart. Charge a pith ball with an ebonite rod rubbed with fur and suspend the pith ball at roughly the midpoint between the plates. Now, ask your teacher to connect a Van de Graaff generator or other charging device across the plates, using alligator leads. After the plates have been charged, disconnect the alligator leads. Predict how changing the separation of the plates will affect the pith ball. Predict how changing the length of time of charging by the generator will affect the pith ball. Test your predictions. When moving the plates, do not touch the plates themselves. Touch only the wooden supports.

CAUTION Care must be exercised in the use of charge generators. Serious heart or nerve injury could occur through contact with large potential differences, depending on the resulting current.

Analyze and Conclude

1. What relationship did you observe between the separation of the plates and the behaviour of the pith ball?
2. What relationship did you observe between the time of charging and the behaviour of the pith ball?
3. Propose an explanation for the behaviour of the pith ball under the changing conditions.